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In the claims:

Claims 1-12 cancelled.

13. (new) A sintered ceramic composite superconducting electric lead, comprising a physical-chemical phase composition including three nano-phases formed by first phase elements constituted by nano-size superconducting ceramic crystal grains which are substantially uniformly and tightly aligned in a-b crystallographic planes along a major direction of an electric current flux of the superconducting electric lead, second phase elements constituted by nano-thick multi-oxide silicate glass films, and third phase elements constituted by nano-dopes and other nano-size impurity particles including non-superconductor ceramic crystals and grains, said first, second and third phase elements together forming a three-dimensional superconducting nano structure comprising a honeycomb-like three dimensional setting network which consists of said second and third phase elements located in boundary areas of said first phase elements and caging and surrounding said first phase elements which are said nano-size superconducting ceramic crystal grains.

14. (new) A sintered ceramic composite superconducting electric lead as defined in claim 13, wherein said superconducting ceramic crystal grains have a size up to 100 nm and have same sizes, superconductive stoichiometry

and morphology, and superconducting properties of raw ceramic crystals and ceramic crystal grains produced from a salt solution using a chemical precipitation technique.

15. (new) A sintered ceramic composite superconducting electric lead as defined in claim 13, wherein the sintered superconducting electric lead is a full-dense sintered ceramics with an apparent density 99.1%-99.9%, wherein said full dense sintered ceramics has a high tightness between said superconducting ceramic crystal grains, which defines Josephson junction and other superconducting effects, resulting in a substantially increased electric current flux transfer between said superconducting ceramic crystal grains within said superconducting three-dimensional nano structure and the sintered ceramic superconducting electric lead.

16. (new) A sintered ceramic composite superconducting electric lead as defined in claim 13, wherein said superconducting three-dimensional nano-structure is configured so that it defines long-term resistance in air and cryogenic ambiences of the superconducting ceramics electric lead and makes the latter reliable and durable as a copper electric lead.

17. (new) A sintered ceramic composite superconducting electric lid as defined in claim 13, wherein said three dimensional network is configured

so that it provides three dimensional percolation and vortex-pinning network effects, resulting in a substantial increase of an electric current carrying capability and magnetic sustainability of the superconducting electric lead at cryogenic temperature.

18. (new) A sintered ceramic composite superconducting electric lead as defined in claim 13, wherein said superconducting lead at cryogenic temperature has an electric current carrying capability up to 10^8 Ampere/cm^2 at insignificant heat losses < 0.5%.

19. (new) A sintered ceramic composite superconducting electric lead as defined in claim 13, wherein said superconducting ceramic crystal grains are $YBa_2Cu_3O_{7-x}$ nano-size high temperature superconductor ceramic crystal grains having orthorhombic crystal morphology and stoichiometric oxygen content corresponding to $0 \leq x \leq 03$.

20. (new) A sintered ceramic composite superconducting electric lead as defined in claim 19, wherein said sintered YBCO superconductor ceramic crystal grains have three-dimensional sizes 20-30 nm, 5-10 nm, 5-10 nm.